January 29, 1998

Ms. Char Hauger
U.S. Army Corps of Engineers
St. Paul District
190 5th Street East
St. Paul, MN 55101-1638

RE: Surface Water Mitigation Plan for the Crandon Mine Project; 94-01298-IP-DLB

Dear Ms. Hauger:

The draft Crandon Project Surface Water Mitigation Plan, dated November 1997, for the Crandon Mine Project was received by the U.S. Environmental Protection Agency (EPA) on December 4, 1997. Comments regarding the draft Plan by the Wisconsin Department of Natural Resources (WDNR) were received on January 27, 1998 and will be the basis of a Surface Water Mitigation Plan meeting to be held in Rhinelander, WI on February 3, 1998.

The following are preliminary comments from the EPA on the Surface Water Mitigation Plan on issues not raised in the WDNR comment letter or to further highlight the issues brought out by the WDNR on the Plan. We realize that the draft Surface Water Mitigation Plan is only addressing mitigation that may be needed due to mine-dewatering induced groundwater drawdown and not due to other potential mining related activities such as changes to surface water flow caused by changes to land use. Other mitigation needs are expected to be fully addressed in the Environmental Impact Report.

<u>Mitigation Framework:</u>

1) With the identification of several new water bodies of concern within the project area, a new site map should be developed showing all the water bodies mentioned within the SW Mitigation Plan in relation to the site and this new map should be included within this Plan.

2) A better explanation of what is included in terms Public Rights Stage (PRS) and Public Rights Flows (PRF) should be included in this section. Are cultural resources and needs included in the PRS or PRF? For example is the maintaining of the PRF of Swamp Creek sufficient enough to not cause impact to the wild rice harvest in Rice Lake?

3) It seems somewhat disturbing that as far along as the CMC groundwater model seems to be, that "new" surface water bodies of concern are being still identified at this time, especially considering that these water bodies are within the project area. How flexible will the mitigation plan be if after the groundwater drawdown begins, more "new" surface water bodies of concern are discovered that are in need of mitigation and/or monitoring?

Categorization of Surface Water Bodies for Permitting:

4) On page 4 of the draft Plan, it states, "The use of flow, water levels, and aquatic biological factors should address the most critical, if not all of the public rights related criteria". What aquatic biological factors are included in the PFS and PRS? See question 2 above. This Plan does not seem to give enough attention to biological needs and assessment. Figure 3-1 does list biological impact as a criteria for determining need for mitigation, but this document does not identify how that impact will be assessed. Will this be included in Appendix B once it is completed? If "aquatic biological factors" are part of input data for mitigation, does this mean that bio-monitoring will be done to show its effectiveness or used as a trigger?

5) The 3rd paragraph on page 5 of the draft Plan is misleading in that it makes it sound as if ss.293.65(3)(b), Wis. Stats has numerical values listed as to what is considered an acceptable impact to the lakes. The draft Plan states, "For those lakes represented with the lake stage package in the regional groundwater flow model, a lake level change of less than 0.5 feet is considered to be minor and reasonable per ss.293.65(3)(b), Wis. Stats, while a lake level change greater than 0.5 is considered significant." The statute does not have any numerical values associated with "will result in the unreasonable detriment of public or private water supplies or the unreasonable detriment of public rights in the waters of the state". Further explanation or reference to the EIR should be made as to how the numbers in the draft Plan were derived. I agree with the WDNR comments in that the potential impact to each lake must be based upon lake-specific information.

6) The last paragraph on page 5 needs clarification. WDNR comments stated that Creeks 12-2a and 12-2d are the same water body so this paragraph needs to be revised. What is confusing is that the draft Plan states that Creek 12-2 discharges into Creek 12-9 upstream of gaging station SG-23, and that the draft Plan is only considering mitigating water lost to Creek 12-2 and Creek 12-9 by adding water to Creek 12-9 above the gaging station. This approach seems to neglect the PRF of Creek 12-2 and the contributions it may make to 12-9 besides flow, such as biological inputs. If Creek 12-2 flow is so low as to not have a PRF, should it then to be treated more like a wetland? The draft Plan simply states that Creek 12-2 is not believed to represent a significant biological resource with respect to trout spawning areas, but gives not justification to this nor does it state if Creek 12-2 supplies oxygen or other needed nutrients to the trout spawning areas within Creek 12-9. More detail needed.

7) Table 3-1 shows that both Oak Lake and Popple Pond are perched lakes and therefore impacts are anticipated to be insignificant. Does this "insignificant" rating only apply to direct impacts

caused by groundwater drawdown or for all project related activities, such as loss of water due to surface water diversions or watershed reconfigurations? What monitoring will be performed for water bodies that fall into Level III or IV? As assumed above, any non-groundwater drawdown related mitigation will be identified within the EIR.

Trigger Criteria:

8) If the trigger to initiate mitigation is based on the PRF for streams, then according to this concept, it is natural for a stream reach to have a flow less than the listed, or soon to be listed, Q_{75}, 25% of the time. According to the first paragraph, this section is to discuss the development of the PRF and PRS but then does not answer questions such as the following: How much below the Q_{75} is acceptable and for how long of a time period? Just by stating that naturally, the stream is below the Q_{75} 25% of the time, does not state what the average seasonal low flow is for particular seasons. Will the triggers be the Q_{75} or Q_{85}? Why one over the other? Also, what is the seasonal high flow for streams? Will mitigation only occur whenever the stream flow is below the PRF or only during certain seasonal periods, or only after it is determined that the natural 25% of the time below PRF has been reached? Are the answers to these understood within the definition of PRF? Overall, how will the decision to start and stop mitigation be made? This has to be explained in much more detail.

Engineering Design Considerations:

5.1: Mitigation Water Requirements

9) How quick will the response time be between determining a stream flow in need of mitigation and the actual mitigation? Immediate, hours, days, weeks? Will the trigger criteria be determined manually or by flow meters read remotely? Will the mitigation water be supplied manually or be supplied automatically when needed? Will it be possible for a Level III to be upgraded directly to a Level I? If this were to happen, would there be enough fore-warning to enable a design and installation of the mitigation measures to be in place prior to environmental damage occurring?

5.3: Treatment Options

10) For surface waters that are labeled as soft water bodies, i.e., Skunk Lake, Little Sand Lake, Deep Hole and Duck Lake, the intercepted groundwater will be treated prior to being used to mitigate potential water loss for these bodies. Is all water that is naturally suppling these lakes considered soft water? For water bodies that are naturally fed by both surface water (soft) and by groundwater (hard), will only soft water be used as mitigation water? In matching what the receiving body is (soft), may not match what is being lost due to the groundwater drawdown (mixture of both hard and soft). Adding only soft water to these lakes may be over compensating and may cause chemical changes within the lake. Does the mixture of hard/soft water naturally mixing within a lake vary depending on the season? Are further studies to be conducted to better determine the chemistry of the mitigation water to best match water lost by

the receiving body?

5.4 Mitigation Water Delivery:

11) For wetlands, is the delivery system of choice, the point source delivery system, still considered the best? Table 5-5 only lists Lakes and Creeks and lists the direct delivery method as the preferred. For wetlands, a direct point source delivery may not be as effective as the groundwater delivery system. The direct point source delivery seems like it would cause excessive flooding at the discharge point while more distant reaches of the wetland may not receive enough water. Will wetlands have more than one discharge point to compensate for distribution problems?

5.5.2: WPDES Permit

12) Table 5-6 shows the projected effluent limits for both soft water and hard water bodies. An additional table showing what the historic range of these constituents is in each of the potential receiving streams/lakes would be helpful.

Level I and Level II Water Body Mitigation System Design:

6.1.1: Mitigation Water Source:

13) The third sentence of this section states, "Intercepted groundwater for use in mitigation of hard water bodies will be directly delivered to each water body from an on-site groundwater storage tank to the various mitigation sites." Is this storage tank above or below ground? If above, how will appropriate groundwater temperatures be made prior to discharge?

14) See Comment #10 above. If Skunk Lake will lose water due to the groundwater drawdown, this indicates that it is groundwater fed, at least partially. If this lake is a soft water body, it must have a natural way of softening the groundwater to get these soft water characteristics. By mitigating the loss of the groundwater contribution to the lake, replacing hard water with soft water, will this overcompensate this issue and make this lake more characteristically soft? For example if Skunk Lake has a hardness value of 7 mg/l and the water that should be recharging this lake has a hardness value of 149.8 mg/l, why replace it with treated water with a hardness value of 3 mg/l? Should the mitigation water match the receiving water's chemistry or should it match the total characteristics of the water lost/not being discharged naturally due to the groundwater drawdown?

6.1.2 Mitigation Water Treatment System Overview:

15) In the final paragraph of this section, it states, "Based on predictions from the regional groundwater model, mitigation of surface water bodies will only need to occur for about one third of the year." More explanation is needed as to how this can be predicted by the regional groundwater model. What third of the year will this be? Will the need for mitigation still be

monitored during the “off seasons”? Will seasonal flooding or high level/flow be created during the appropriate seasons to reflect natural high fluctuations even if this period falls outside of the 1/3 of the year covered by mitigation? If mitigation is tied strictly to PRF/PRS then the natural highs and lows may not be experienced, but the system may be kept unnaturally consistent at the PRF/PRS.

6.1.4 Description of Treatment System Facilities

16) Will the waste materials derived from the RO Treatment system be added to the overall Waste Characterization Plan? Additional waste include; backwash water residuals from RO filters, sulfuric acid, used filters, antiscalants, spent cleaning solutions and other constituents comprising the concentrate stream. How many drums of antiscalant (sodium hexametaphosphate) will be stored on-site at any one time and how and where will they be stored? How large will the sulfuric acid storage container be? Are these wastes compatible with the liners that are proposed for the TMA?

17) Is there any concern regarding the emissions from the air stripping operations?

18) Is the concept of using a effluent wet well explained elsewhere?

6.1.5.1 Overview

19) How will the polyethylene piping be joined? Threaded or glued?

6.3.4 Description of Treatment System Facilities

20) What will occur if both softener systems (or any dual system) are down for an unanticipated reason? I know this depends on how long the systems are down, but what for each case is a projected time period in which impacts on the water body may be noticed. For example, if the softener systems were both down due to mechanical problem, how long would it take for environmental impacts to be noticed at Skunk Lake; days, weeks, months? What other alternatives may be considered as backup?

<u>7 Mitigation System Selection and Design for Level III Water Bodies &
8 Level IV Water Bodies Mitigation Plan:</u>

21) These sections need to be in more detail, or at the very least, mention again that the project will be monitored extensively and that mitigation Level of these water bodies may be revised based on continual updates to the groundwater models.

<u>9 Mitigation System Operation:</u>

9.1 Surface Water Monitoring:

22) Monitoring of these water bodies should begin as soon as possible to develop better baseline data regarding water levels, stream flow, biological functions, etc. Bio-criteria are stated as being part of the "input data for each waterbody", so bio-monitoring should be done to determine effectiveness of mitigation plan.

9.2 Mitigation Implementation:

23) If the water levels/flows decrease but are still at or just above the PRS/PRF, will beaver activity (dam construction) be expected to increase thus further decreasing water levels/flows downstream to below PRS/PRF? If this occurs, is the drop below trigger levels due to the mine drawdown or due to natural occurrences (beaver dam construction)? Will CMC remediate for loss of flow?

24) Will the monitoring for mitigation needs be done manually or will it all be automated? For example once the PRF is recovered, will the mitigation systems automatically shut off or will it need to be turned off manually? (See Comment #9)

25) Mention should be made as to how quick it can be anticipated that a Level II or Level III can be elevated to a Level I and put into action. (See Comment #9)

10 Mitigation System Impacts Assessment:

10.1 Construction Impacts:

26) Was a separate survey, different from other pipeline construction evaluations within the EIR, conducted to get the conclusion that the pipeline routes for mitigation water "will not affect any sensitive biological communities or species"? Will pipelines be removed after mitigation is no longer needed after site closure? Or left in place?

These comments are only preliminary and more may be forthcoming based on changes to this draft Plan based on comments by others, model updates, and any other amendments to this draft. If you should have any questions regarding the above comments, please do not hesitate to call me at 312-886-7252.

Sincerely,

Daniel J. Cozza, Crandon Mine Project Manager
U.S. Environmental Protection Agency

cc:
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